Carcass Disposal FAQs and Issues

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22. How will biosecurity risks be evaluated for each facility?

23. Develop chart of bird age versus bird weight

24. Develop improved carbon source calculation

25. Develop checklist of needed supplies equipment labor material

26. Is additional nitrogen source needed for composting?

27. Develop dust control procedures.

28. If disinfectants are added to CO2 foam for euthanasia, will the disinfectants inhibit the composting process?

29. What are the optimal base and cap thicknesses for compost piles?

30. What are the performance criteria for carbon sources? (moisture, size, composition)?

31. Has CDC changed minimum respirator from N95?

32. Should ventilated air from infected house be filtered or slowed to prevent spreading virus?

33. Need Depopulation Procedure

34. Need Cleaning and Disinfection Procedure

35. Need Outdoor Composting Procedure

36. Need Secure Transport Procedure

37. What are minimum building criteria for in-house composting?

38. Improve temperature measurement procedure

1. Who is lead person at each site, and who will responders be?

Upon discovery of HPAI at a poultry facility, the State Veterinarian or the APHIS Veterinarian in Charge [AVIC] will be notified. The AVIC will dispatch a Foreign Animal Disease Diagnostician (FADD) to the facility to examine the flock and collect samples for analysis. If the FADD determines the flock is likely infected with HPAI, the FADD will notify the AVIC and State Veterinarian who will notify the APHIS Veterinary Services Deputy Administrator. APHIS will then select a course of action, likely activation of the APHIS Emergency Operations Center (AEOC). Upon activation of the AEOC, a strike team will be dispatched to the outbreak location to set up an incident command system near the infected farm(s). The APHIS incident commander (the most knowledgeable individual at the location) will be the lead person at the command center, and will designate a lead APHIS or State individual at each site. The State will then exercise its regulatory quarantine authority and place a hold order on the area prior to a final diagnosis.

The incident command team may include industry or company representation; Federal and/or State representation to provide regulatory guidance; and public health officials should the outbreak be transmissible to humans. The response personnel may include the poultry company if the company has the resources to respond effectively under APHIS' supervision. If not, APHIS will arrange for response teams comprised of regional poultry industry responders, APHIS employees, state employees, and/or contractors, depending on the circumstances of the outbreak.

2. Will contractors be used for depopulation, disposal, cleaning or disinfection activities?

Contractors have been used at previous outbreaks to assist with cleaning and disinfection.

APHIS is preparing to utilize contractors and/or poultry industry responders for depopulation, disposal, and cleaning/disinfection by identifying contract requirements, and identifying potentially qualified service providers. If the outbreak is limited in scope, contractors may not be needed. If the outbreak is widespread, use of contractors under APHIS supervision will be considered.

3. Can we recommend foam depopulation?

Foam depopulation is currently being evaluated by the American Veterinary Medical Association and APHIS Animal Care to determine if it can be utilized as a humane method of depopulation.

Based on research from the University of Delaware, foam is as humane as CO2 gas, which is an approved method. However, foam depopulation has not yet been officially accepted.

4. What minimum standards must compost meet before being moved outdoors from in house composting?

The compost pile must be at least 15 days old; must have documented sustained temperatures of at least 131 F for 15 consecutive days, and must produce negative results

for VI test samples taken as described in the In-House Composting training module and job aid before being moved outdoors.

5. Can composted material be land applied or landfilled?

Yes. Affected farmers should identify nearby facilities that can land apply the compost in accordance with their Nutrient Management Plan or recommended application rates. If no nearby facilities are able to accept the non-infectious compost, then landfilling will be required, unless the material can be processed for sale in accordance with regulatory guidelines.

6. What is guidance on using pesticides or rodenticides to control disease vectors

Guidance currently in progress.

7. Are these procedures linked to the Play Book?

Appendix D to Playbook has just been finalized. This appendix outlines general disposal options and variables which affect which option is selected.

8. Do piles actually need to be turned, as turning can increase exposure risks

Yes. Turning is required to achieve uniform virus inactivation. See USDA APHIS Directive 6800.1, "Ensuring the Protection of Employees Involved in HPAI Control and Eradication Activities" for information about reducing exposure risks.

9. How will media and onlookers be managed?

Upon discovery of HPAI in a US commercial poultry flock, the APHIS Emergency Operations Center will be activated and a strike team of 10 people will be dispatched to the outbreak location. An incident command system (ICS) will be initiated. Within the ICS structure, a public affairs official will be designated to provide information to media. Onlookers will be discouraged from entering quarantine areas and the security staff will manage trespassers.

10. How will scavengers or vectors be controlled?

Scavengers and disease vectors are not typically a problem with composting as long as the pile is constructed with an adequate thickness of cover material (see composting procedure). Existing composting facilities for food waste, slaughter waste, and other food sources do not attract scavengers or vectors since the temperature rise quickly renders the waste undesirable. However, outdoor piles may attract some birds in colder climates because they like the warmth of the pile.

Each farm will need to be assessed at the time of an outbreak to determine if there is infestation that warrants treatment, and the active piles must be monitored to ensure vectors do not become a problem.

11. Would a table of composting time versus temperature be useful to ensure virus inactivation quality control?

Temperature (C) (1)	Temperature (F) (1)	Duration (days) (2)	Comments
<40	<104	See comments.	Insufficient microbial activity--rebuild pile to include appropriate moisture, air, and carbon source-to-mortality ratio.
40	104	Any	
45	113	Any	
50	122	Any	
55	131	15	If pathogen is high path avian influenza, omit 5 EPA-required turnings to protect worker health. (3)
60	140	15	
65	149	15	
>65	>149	See comments.	Too hot for proper microbial activity--turn pile and/or aerate to reduce temperature to within optimum range.

(1) Numerous sources cite the optimum temperature for compost microorganism activity to be in the range of 40-60 C (104-140 F).

(2) According to EPA regulations concerning significant reduction of pathogens in sewage sludge by composting found in Title 40, US Code of Federal Regulations, Appendix B to Part 503—Pathogen Treatment ProcessesT: T“Section B. Processes to Further Reduce Pathogens (PFRP), 1. TCompostingT—…Using the windrow TcompostingT method, the temperature of the sewage sludge is maintained at 55 degrees [131 F] or higher for 15 days or longer. During the period when the compost is maintained at 55 degrees [131 F] or higher, there shall be a minimum of five turnings of the windrow.”

(3) Research by the University of Delaware Extension Service found 10-14 days of composting without turning at a temperature up to 160 F (71 C) completely inactivated the avian influenza virus in windrows of composted mortalities.

12. Is there State data compiled on the most common disposal facility options: landfills, incinerators and renderers (locations, policies, regulations, and costs)?

APHIS will collaborate with EPA to access their database on landfill and incinerator locations, capacities, and points of contact. Rendering facility data needs to be added to the database.

13. Is immediate depopulation strategy most protective of human health?

APHIS current position is that as long as HPAI is an animal pathogen, not a human pathogen, and as long as proper human health precautions are utilized, then immediate

depopulation of infected flocks is a sound strategy for containing a potential outbreak. Residents near an outbreak location will likely demand eradication.

It is unlikely that there will be an outbreak in the human and bird population at the same time. However, in the unlikely event that this does occur, it will be necessary to depopulate immediately to avoid breeding the virus, while limiting the number of people involved. This might involve sealing the barns from the outside, using 48 to 72 hours of lag time from depopulation to disposal for virus reduction due to the ph drop and the heat generated from carcass decomposition, or if available, turn the heat on in the barns to speed virus inactivation.

14. Develop stakeholder consensus on land application and landfilling.

Currently in progress.

15. Identify where state regulations limit disposal options.

Currently in progress.

16. Do materials need to be manifested from cradle to grave?

Based on a review of the EPA regulations, it is APHIS' understanding that Resource Conservation and Recovery Act solid waste requirements (40 CFR) do not apply to infectious materials. However, Department of Transportation requirements (49 CFR) and Public Health requirements (42 CFR) could apply, and some aspects might need to be waived in the event of an outbreak situation where infectious materials require transport. Clarification with other federal agencies is in progress.

17. Is depopulation, disposal, cleaning or disinfection information sensitive and should access be restricted?

Currently, information is shared among other countries, US federal and state agencies, academia, and industry, as represented on the working group.

APHIS intends to continue to share information, adding new access by request, so that coordination will be facilitated in the event of an outbreak.

18. Will outdoor composting be a source of pathogens for criminal use?

The risk appears to be low because the concentration of pathogens compared to the size of the compost pile will be small. In addition, there will be significant security in the quarantined areas initially when the virus is most active.

19. Who will maintain security of compost piles? If it's a poultry company, is a formal agreement needed?

APHIS already has or is in the process of developing MOUs with other federal agencies to assist with security. Further, the area where composting is occurring will be under quarantine, so security will already be in place for quarantine purposes.

20. Does APHIS need to work with local law enforcement to enforce quarantines?

APHIS expects to collaborate with local law enforcement in the event of an outbreak.

21. How will quarantine zones be controlled?

APHIS Investigative and Enforcement Services is responsible for controlling quarantine zones, in collaboration with local law enforcement and emergency personnel.

22. How will biosecurity risks be evaluated for each facility?

It will be a team approach led by the APHIS Emergency Management personnel, who are familiar with the spread of disease among animals. They will collaborate with other federal, state and local agencies as appropriate.

23. Is there a reference chart of bird age versus bird weight?

Different types of birds will have different weight ranges depending on age. The poultry producers will be able to provide the specific information on the specific birds at the time of an outbreak.

24. Develop improved carbon source calculation.

Keener et al (Keener, H.M., D.L. Elwell, and M.J. Monnin. 2000. *Procedures and Equations for Sizing of Structures and Windrows for Composting Animal Mortalities.* Applied Engineering in Agriculture. American Society of Agricultural Engineers (now American Society of Agricultural & Biological Engineers) vol. 16(6) 681-692.) recommend 0.0069 cubic yards of sawdust per pound of carcass.

25. Develop checklist of needed supplies equipment labor material.

In process.

26. Is additional nitrogen source needed for composting?

The litter and carcasses will provide nitrogen, but moisture may need to be adjusted by adding water if the compost is too dry, or by adding sawdust or other absorbent carbon source if the compost is too moist.

27. Develop dust control procedures.

During the depopulation and composting procedures, there will need to be some ventilation in order for people to work comfortably in the houses. One option for providing the needed ventilation while minimizing transport of pathogens via dust is to direct the air flow from poultry house exhaust fans toward the ground (using poly). This area would then be disinfected afterwards. Another option is to direct the air flow through a filter prior to discharge. In either case, the procedures require validation and documentation. Further research is needed on this topic.

28. If disinfectants are added to CO2 foam for euthanasia, will the disinfectants inhibit the composting process?

Initial recommendation from depopulation expert is to avoid using anything besides water to prepare CO2 foam to minimize trauma to poultry during euthanasia. In addition, there is currently no data indicating that disinfectants used in this manner will reduce viral activity. However, some disinfectant is likely to be present in compost, but it is unlikely to have a significant affect on compost. Research is ongoing.

29. What are the optimal base and cap thicknesses for compost piles?

The primary purpose of the base layer is to retain leachate that can pollute soil and water, attract insects, release odors, and complicate removal of the pile. The main purposes of the cap layer are to prevent rainfall from entering the compost, prevent scavengers from digging in the piles, absorb odors, and insulate the pile. The base and cap carbon source layer thicknesses depend on several variables:

Location of compost pile (indoors or out)
Ambient air temperature
Amount of rainfall on the pile
Size of carcasses being composted
Water-holding capacity of the base/cap layer material

BASE LAYER:

Indoor piles – 3- to 6-inch base layer (using thinner end of range if base layer is dry, mortalities are layered one bird thick, each layer is separated by 3 inches of carbon source, and the house is ventilated)

Outdoor piles – 12- to 24-inch base layer (using thicker end of range if low evaporation, and high precipitation)

CAP LAYER:

Indoor piles – 6- to 12-inch + cap layer (using thicker end of range for larger animals, ensuring a minimum 2-inch layer over all animal parts)

Outdoor piles – 12- to 24-inch + cap layer (using thicker end of range for larger animals, colder ambient temperatures, or higher rainfall, and thinner end of range if using compost fleece)

30. What are the performance criteria for carbon sources? (moisture, size, composition)?

Information to be provided.

31. Has CDC changed minimum respirator from N95?

The CDC recommendation has not changed, although the World Health Organization is evaluating the recommendation. For workers with direct exposure to contaminated materials from a known HPAI source (such as "strike teams" and other specially trained poultry workers involved in outbreak response such as depopulation employees and composting), a powered air purifying respirator is recommended.

32. Should ventilated air from infected house be filtered or slowed to prevent spreading virus?

See response to Question 27.

33. Need Depopulation Procedure.

Currently in progress.

34. Need Cleaning and Disinfection Procedure.

Currently in progress.

35. Need Outdoor Composting Procedure.

Currently in progress.

36. Need Secure Transport Procedure.

Currently in progress.

37. What are minimum building criteria for in-house composting?

In house composting will work in any clear span house. It may be an option for pole and 2-story houses, but the procedures require further research, which is ongoing.

38. Improve temperature measurement procedure.

See revised procedure in In-House Composting course module and job aid.